Graph one period of this function. Label the coordinates of all x-int, Max, and Min.

$$y = -3\mathrm{Cos}(5(x + \tfrac{\pi}{6})) - 7$$
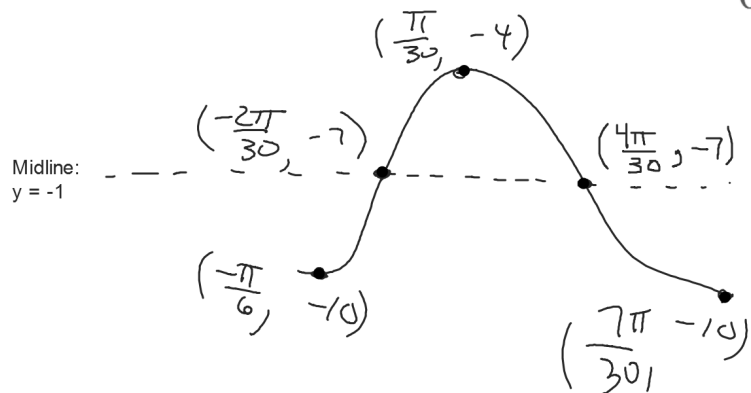
Amplitude = 3

Graph is Upside Down

$\left(\tfrac{\pi}{30}, -4\right)$

$\left(\tfrac{-2\pi}{30}, -7\right)$

$\left(\tfrac{4\pi}{30}, -7\right)$

Midline:
y = -1

$\left(\tfrac{-\pi}{6}, -10\right)$

$\left(\tfrac{7\pi}{30}, -10\right)$

$\text{period} = \tfrac{2\pi}{5}$

Phase Shift: $\tfrac{\pi}{6}$ left

(this gives the starting x-coord)

To find the x-coordinates after the starting point you can find one-fourth of the period and add it any x-coord to get the next x-coord.

period = $\tfrac{2\pi}{5}$

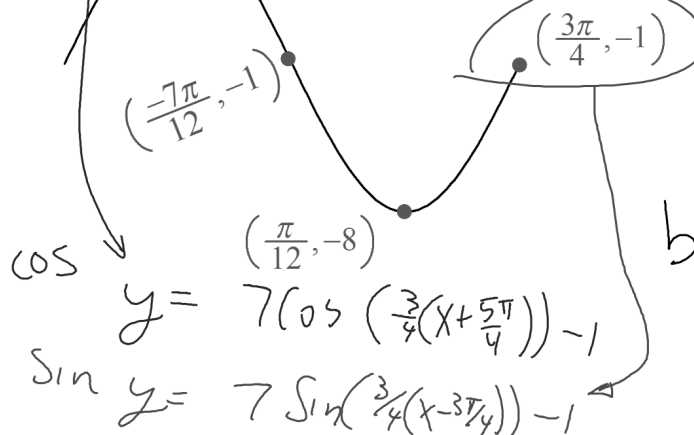1/4 of a period = $\tfrac{1}{4} \cdot \tfrac{2\pi}{5} = \tfrac{\pi}{10}$

If you add $\tfrac{\pi}{10}$ to an x-coord you will have the next x-coord. To accomplish this you will need to get common denominators.

Write a Sine and a Cosine equation for this graph.

$\left(\tfrac{-5\pi}{4}, 6\right)$ If you sart here for Cosine

If you start here for Sine

$\left(\tfrac{3\pi}{4}, -1\right)$

$\left(\tfrac{-7\pi}{12}, -1\right)$

$\left(\tfrac{\pi}{12}, -8\right)$

cos

$y = 7\cos\left(\tfrac{3}{4}(x + \tfrac{5\pi}{4})\right) - 1$

Sin $y = 7\sin\left(\tfrac{3}{4}(x - \tfrac{3\pi}{4})\right) - 1$

period:

$\tfrac{\pi}{12} - \tfrac{-7\pi}{12}$

$\tfrac{8\pi}{12} = \tfrac{2\pi \cdot 4}{3}$

period = $\tfrac{8\pi}{3}$

$b = 2\pi \cdot \tfrac{3}{8\pi} = \tfrac{3}{4}$